



Attorney Docket No. tesa AG 698-WCG
6713-St-bb

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Ronald Pfaff, et al.

Serial No. : 09/720,947

Filed : January 3, 2001

For ELECTRICALLY CONDUCTIVE THERMOPLASTIC HEAT-
ACTIVATED ADHESIVE FILM

Art Unit : 1771

Examiner : Daniel Zirker

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12-30-00

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December 18, 2002

Hon. Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

APPEAL BRIEF UNDER 37 C.F.R. RULE 1.192

This is an appeal from the final rejection by an Examiner of Art Unit. 1771.

1. REAL PARTY IN INTEREST

The instant application is owned by tesa AG, record owner hereof.

2. RELATED APPEALS AND INTERFERENCES

The undersigned is not aware of any appeals, interferences, re-examinations, infringement actions, or the like, in any related applications.

3. STATUS OF THE CLAIMS

The claims pending in this application are claims 9-20 and all of said claims are under appeal.

4. STATUS OF AMENDMENTS

The last amendment made was that filed on September 19, 2002 (mail date), and said amendment was entered. There are no unentered amendments.

In this regard, it is noted that the Advisory Action dated 09/26/2002, while not specifically indicating that the amendment was or was not entered, does indicate that Applicants' reply overcame the 35 U.S.C. 112, second paragraph rejection of claims 10 and 15, and that Applicants' request for reconsideration has been considered. It therefore appears that the amendment must have been entered.

It should also be noted that claim 20 was added by Appellants' Rule 111 Amendment, dated July 26, 2002 (mail date). Although not specifically rejected, it is believed that said claim may have been overlooked by the Examiner and otherwise would have been included in the art rejection and/or rejected as depending from a rejected base claim (claim 10).

5. SUMMARY OF THE INVENTION

Each of the appealed claims pertains to a novel electrically conductive, thermoplastic and heat-activatable adhesive film, such as is used for the permanent electrical connection of two articles. The novel adhesive film achieves an effective and permanent bond while simultaneously producing an electrically conductive contact when e.g. electronic components are bonded with the heat-activatable adhesive film (page 2, line 35-page 3, line 2).

The adhesive film is a mixture of reactive resins, which crosslink to form a three-dimensional polymer network of high strength, and permanently elastic elastomers, which act against embrittlement of the product (page 3, lines 13-16). The chemical crosslinking reaction of the resins brings about high strengths between the adhesive film and the surfaces to be bonded, and achieves a high internal strength in the product (page 3, lines 1-3).

The adhesive film comprises silver-coated glass beads (Claim 9, sub-part iv) which permit conductivity only in the z direction, while, due to the absence of mutual contact of the beads, there is no conductivity in the x-y plane (page 4, lines 11-14).

The diameter of the beads is at least equal to the thickness of the adhesive film (Claim 1, sub-part v; page 4, lines 27-30).

6. ISSUES

It is believed that there is only one issue, and that issue is whether claims 9-13 and 16-19 (16-20) are unpatentable under 35 U.S.C. 103(a) as obvious over EP 0 140 619, taken individually or in view of EP 0 134 623 (Office Action of 08/16/2002 [paper # 10], page 2, paragraph 3).

Claim 14 is objected to as dependent upon a rejected base claim (claim 9), but this issue is ancillary to the above issue.

Although the Examiner maintains that claim 15 continues to be rejected under 35 U.S.C 112, second paragraph, as depending from a cancelled claim; the dependency was amended to claim 9 in the amendment filed September 19, 2002 (mail date). As discussed above, it appears that this amendment was, in fact, entered.

Thus, while there are actually three issues, the last two are believed to already be resolved, as discussed above, so that if the record is corrected to reflect the correct status of the claims, there will be only one issue.

7. GROUPING OF CLAIMS

Claims 14 and 15 stand or fall separately from the remaining claims, as claims 14 and 15 are not rejected over the art. The accompanying Rule 116 Amendment places these two claims in independent form, by additions of the limitations of claim 9, from which they were dependent. No new matter or new issues are thereby presented.

8. ARGUMENT

Appellants' claims, as originally filed, require that the diameter of the glass beads be at least equal to the thickness of the adhesive film. With this structure, individual beads in Applicants' adhesive make contact with both of the components that are bound by the adhesive, so that they are in electrical contact with each other through individual silver-coated glass beads. Thus, Appellants' adhesive film provides direct electrical contact through the silver-coated glass beads, but only in the z direction; not in the x-y direction.

By contrast, the '619 reference prohibits the use of beads having diameters that are equal to the thickness of the film. Thus, at page 4, lines 10-11, the '619 reference teaches that:

***“...the thickness of an adhesive layer
is at least 110% of the average
particle size of the electroconductive
particles...”***

Note also the nature of the particles shown in Fig. 1, wherein the diameters of the individual particles are clearly far less than the thickness of the film. In order for the adhesive layer of the '619 reference to become conductive, the layer **must** be subjected to plastic deformation so that the particles can be brought into contact with one another (page 5, lines 2-6). This is in stark contrast to Appellants' conductive layer, which is conductive in its original state, since the conductive particles have diameters which are at least equal to the thickness of the film.

Thus, the '619 reference clearly teaches away from the present invention.

The Examiner would then combine EPA '623 with EPA '619. These two references are not combinable, however, because the inventive concepts of each of them would be violated by the substitution of the particles of the other. EPA '619 requires that the diameters of the particles be less than the thickness of the adhesive layer, whereas EPA '623 requires that the diameters of the particles be greater than the thickness of the adhesive layer.

According to EPA '623:

"When the particle-containing adhesive layer is removed from the carrier web and compressed between two flat, rigid plates, the particles are flattened to the thickness of the

adhesive between particles. This provides small, flat conductive areas at both surfaces of the adhesive layer sufficient to provide good electrical and thermal contact between a die and a conductive substrate through each of the flattened particles." (Page 2, line 36-page 3, line 8)

The particles of the '623 reference clearly cannot be glass beads, because glass beads would not be expected to be capable of being "flattened" without breaking. The '623 reference therefore teaches away from Appellants' invention, as well as from the invention of the '619 reference, which requires particles that are smaller than the thickness of the adhesive layer.

Thus, even if one were to consider these two references together, Appellants' invention would not be rendered obvious. The particles of the '623 reference must be **deformable**. See page 2, lines 25-28 and Fig. 3. This could not possibly lead to glass beads; and more likely, would discourage the use of glass beads, such as are recited in Appellants' claims.

It is also respectfully pointed out that the mere fact that the prior art can be modified does not make the modification obvious unless the prior art suggests the desirability of the modification. See In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992); In re Mills, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

EPA '623 and EPA '619 are diametrically opposed to each other, with respect to the particles used. They are not combinable.

Accordingly, EPA '619, whether taken alone or in view of EPA '623 can not possibly render Appellants' claims obvious, and the rejection of claims 9-13 and 16-19 under 35 U.S.C. 113(a) as obvious over EPA '619 either individually or in view of EPA '623 should now be reversed.

In the event that the accompanying Rule 116 Amendment is not entered, and claims 14 and 15 not made independent and allowed, the objection/rejection of said claims as dependent upon a rejected base claim should also be reversed.

9 CONCLUSION

Wherefore, it is submitted that the final rejection is in error and should be reversed.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this amendment is required, Appellants request that this be considered a petition therefore. Please charge the required petition fee to Deposit Account No. 14-1263.

ADDITONAL FEE

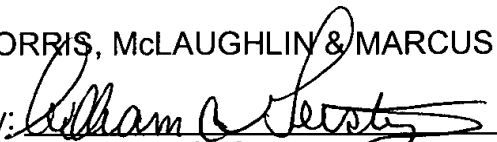
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Respectfully submitted,

NORRIS, McLAUGHLIN & MARCUS

By:



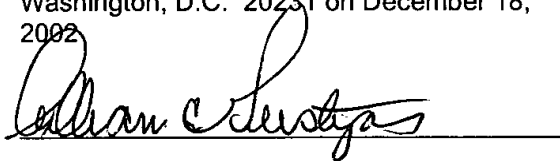
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Date: December 18, 2002

10. APPENDIX A

If the accompanying Rule 116 Amendment is entered, the claims on appeal read as follows:

Claim 9. Electrically conductive, thermoplastic and heat-activatable adhesive film, comprising

- i) a thermoplastic polymer in a proportion of from 30 to 89.9% by weight,
 - ii) a) one or more tackifying resins in a proportion of from 5 to 50% by weight or
b) epoxy resins with hardeners, with or without accelerators, in a proportion of from 5 to 40% by weight, or
c) both said one or more tackifying resins in a proportion of from 5 to 50% by weight and said epoxy resins with hardeners, with or without accelerators, in a proportion of from 5 to 40% by weight,
- and
- iii) silver-coated glass beads in a proportion of from 0.1 to 40% by weight,
 - iv) where the diameter of the glass beads is at least equal to the thickness of the adhesive film.

Claim 10. Adhesive film according to Claim 9, wherein the thermoplastic polymer comprises a member selected from the group consisting of

thermoplastic polyolefins, polyesters, polyurethanes or polyamides and modified rubbers.

Claim 11. Adhesive film according to Claim 9, wherein the adhesive film is blended with one or more additives.

Claim 12. Thermoplastic adhesive film according to Claim 9, wherein the adhesive film has a thickness of from 20 to 500 μm .

Claim 13. Thermoplastic adhesive film according to Claim 9, wherein the adhesive film is suitable for hot pressing at temperatures below 120°C.

Claim 14. Thermoplastic adhesive film comprising

- i) a thermoplastic polymer in a proportion of from 30 to 89.9% by weight,
- ii) a) one or more tackifying resins in a proportion of from 5 to 50% by weight or
- b) epoxy resins with hardeners, with or without accelerators, in a proportion of from 5 to 40% by weight, or
- c) both said one or more tackifying resins in a proportion of from 5 to 50% by weight and said epoxy resins with hardeners, with or without accelerators, in a proportion of from 5 to 40% by weight,

and

- iii) silver-coated glass beads in a proportion of from 0.1 to 40% by weight,
- iv) where the diameter of the glass beads is at least equal to the thickness of the adhesive film, and

wherein the adhesive film is in the form of a punched film section.

Claim 15. A method for implanting electrical modules in a card body provided with a cutout for accommodating an electronic module which on a first side has a plurality of contact surfaces and on a second side, which is opposite the first side, has an IC chip whose terminals are connected via electrical conductors to the contact surfaces, wherein an electrically conductive, thermoplastic and heat-activatable adhesive film, comprising

- i) a thermoplastic polymer in a proportion of from 30 to 89.9% by weight,
- ii) a) one or more tackifying resins in a proportion of from 5 to 50% by weight or
b) epoxy resins with hardeners, with or without accelerators, in a proportion of from 5 to 40% by weight, or
c) both said one or more tackifying resins in a proportion of from 5 to 50% by weight and said epoxy resins with hardeners, with or without accelerators, in a proportion of from 5 to 40% by weight,
and
- iii) silver-coated glass beads in a proportion of from 0.1 to 40% by weight,

iv) where the diameter of the glass beads is at least equal to the thickness of the adhesive film

is used to connect the second side of the module to the card body.

Claim 16. A method for structural bonding, wherein the adhesive film of claim 9, with or without subsequent heat-curing, is used for said bonding.

Claim 17. The adhesive film of claim 11, wherein said additives are selected from the group consisting of colorants and mineral or organic fillers.

Claim 18. The adhesive film of claim 17, wherein said additives are selected from the group consisting of silica, carbon powders, and metal powder.

Claim 19. The adhesive film of claim 13, wherein said temperatures are from 80°C to 100°C.

Claim 20. The adhesive film of claim 10, wherein said modified rubbers are nitrile rubbers.

11. APPENDIX B

If the accompanying Rule 116 Amendment *is not* entered, the claims on appeal read as follows:

Claim 9. Electrically conductive, thermoplastic and heat-activatable adhesive film, comprising

- i) a thermoplastic polymer in a proportion of from 30 to 89.9%
by weight,
 - ii) a) one or more tackifying resins in a proportion of from 5 to 50% by
weight or
b) epoxy resins with hardeners, with or without accelerators, in a
proportion of from 5 to 40% by weight, or
c) both said one or more tackifying resins in a proportion of from 5 to 50%
by weight and said epoxy resins with hardeners, with or without
accelerators, in a proportion of from 5 to 40% by weight,
- and
- iii) silver-coated glass beads in a proportion of from 0.1 to 40% by weight,
 - iv) where the diameter of the glass beads is at least equal to the thickness of
the adhesive film.

Claim 10. Adhesive film according to Claim 9, wherein the thermoplastic polymer comprises a member selected from the group consisting of

thermoplastic polyolefins, polyesters, polyurethanes or polyamides and modified rubbers.

Claim 11. Adhesive film according to Claim 9, wherein the adhesive film is blended with one or more additives.

Claim 12. Thermoplastic adhesive film according to Claim 9, wherein the adhesive film has a thickness of from 20 to 500 μm .

Claim 13. Thermoplastic adhesive film according to Claim 9, wherein the adhesive film is suitable for hot pressing at temperatures below 120°C.

Claim 14. Thermoplastic adhesive film according to Claim 9, wherein the adhesive film is in the form of a punched film section.

Claim 15. A method for implanting electrical modules in a card body provided with a cutout for accommodating an electronic module which on the first side has a plurality of contact surfaces and on the second side, which is opposite the first side, has an IC chip whose terminals are connected via electrical conductors to the contact surfaces, wherein the adhesive film of claim 9 is used to connect the second side of the module to the card body.

Claim 16. A method for structural bonding, wherein the adhesive film of claim 9, with or without subsequent heat-curing, is used for said bonding.

Claim 17. The adhesive film of claim 11, wherein said additives are selected from the group consisting of colorants and mineral or organic fillers.

Claim18. The adhesive film of claim 17, wherein said additives are selected from the group consisting of silica, carbon powders, and metal powder.

Claim 19. The adhesive film of claim 13, wherein said temperatures are from 80°C to 100°C.

Claim 20 The adhesive film of claim 10, wherein said modified rubbers are nitrile rubbers.